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Designing Constructed Wetlands for Water Purification in Tanzania

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ABSTRACT

In Tanzania half of households have unsafe drinking water (Nkonya, 2010) and many diseases arise from poor water quality, including meningitis, hepatitis A and E, and salmonella (Kusiluka et al., 2004). One cost-effective way of cleaning water is by passing it through a wetland. This research is focused on simplifying the process of horizontal subsurface flow wetland construction for the villagers of Endallah. The outcome is an Excel tool that standardizes methodology for building wetlands that can then be applied to Endallah. Rainfall data from the Arusha region of Tanzania was used to make a rainfall estimation grid. From this data appropriate plant types and water consumptions were selected. The Excel tool was then used to size the wetlands based on locations selected by Tanzanian residents. Overall, a 450 cubic meter would be the best fit for Endallah. This would provide 50 people with 20 liters of water per person per day or 100 people with 10 liters from December through July. Because of evaporation, a limited surface area with reasonable depth will be needed for wetlands in arid regions. While developing countries work towards improved laws and infrastructure for water use, constructed wetlands will be able to supplement water resources.

KEYWORDS

constructed, wetland, Tanzania, Africa, water

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